Rhodora

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THE DENTARIAS OF CONNECTICUT.

Edwin H. Eames, M. D.

In a tract of rocky hillside woodland in Sherman, Connecticut, within half a mile of the New York state-line, there is a large colony of the daintily beautiful *Claytonia Caroliniana* Michx., which Mr. E. H. Austin had enthused me to visit April 19, 1903, at a time when it was flowering abundantly.

With this and other interesting species were a few plants of *Dentaria diphylla* Michx., with swelling flower-buds, together with others in the same condition but strikingly different in appearance. Variously situated in the damp humus of these cool woods, on rocks and in deeper accumulations of soil along the hillside, extending down a more open northerly-facing slope, nearly to the rapid waters of the Housatonic River, this peculiar plant was found in quantity at altitudes varying from 405 to 445 feet.

The stem-leaves were opposite as in *D. diphylla*, but their leaflets at once arrested my attention: distinctly narrower, more pointed and incisely-toothed, in marked contrast with the accompanying much broader and still more deeply and irregularly incised or somewhat lobate basal leaflets, they were distinctive at a glance.

When the superficial rootstocks, at times directly upon the surface and green or purple in varying degree, were uncovered, they were found to be composed of four or five to eleven or more interrupted, distinctly fusiform, toothed and tuberculate segments of annual growth and wholly unlike those of its companion species.

In flowering specimens kindly gathered for me by Mr. Austin, on May 3, and in others which we both collected one week later, the distinctions noted were strengthened by an additional one of equal interest:

the white flowers were remarkable for their large size, exceeding those of any other of our species, especially its companion of these woods, the extremes of each barely connecting.

D. diphylla is our only species to which the term "rootstock continuous" has been applied, in apposition to "jointed" as noted for all the other species. Studies in both field and herbarium seem to show that the latter term has been loosely applied. Each annual segment of most so-called "jointed" rootstocks may be a joint, but in those of the plants observed in Sherman and in all others known from our region, with one exception, there is not the faintest indication macroscopically or by fracture of a fixed or definite place of the union between these enlarged parts of the rootstock.

Just prior to the close of a field meeting of the Connecticut Botanical Society, held at Rainbow, on the Farmington River, June 6, 1903, I was particularly fortunate in finding a colony of *D. maxima.* In rich soil along the banks and alluvial bottoms of a woodland stream and nearly concealed by luxuriant later vegetation, were quantities of this rare and little understood species, chiefly noticeable for the array of bright yellow foliage like spots of sunshine filtered through the leaves overhead.

Careful search was instituted for the best the colony afforded, in company with Mr. B. B. Bristol. Although occasional plants bore pods of about mature size, few of these seemed destined to mature seeds owing to the aestival decadence prevailing among their kind. This colony seems to occupy a narrow area approximating a length of ten or twelve rods.

In this species the rootstock has been specially noted as "jointed." These plants seem to be fairly representative of the species, but there are no joints in any proper sense of the term. In fact, the rootstock is made up of constricted fusiform portions in a manner similar to the Sherman plants, but tubercled in the axils of *prominent* incurved teeth. A noteworthy and distinctive character seems to be the lifelong persistence, near the base of each segment, of the premorse remains of former stems and leafstalks and more conspicuous than any other appendages.

Since this appeared to be the second [1] Connecticut station for this species and, as it happens, in the same county of Hartford, studies were made to include specimens from the recorded station. These

[1] See RHOD. V, 168–169.

were found to have rootstocks somewhat anomalous in character and in other respects differed from any species now recognized, as will be described. This leaves the station for *D. maxima* noted in the present article the only one so far known in the state.

The plants reported by Mr. Bissell and *D. heterophylla* do not have jointed rootstocks although in the latter the fragile constricted connecting parts promotes easy rupture. *D. laciniata*, on the other hand, does have truly jointed and characteristic rootstocks in which fracture must and does occur at the precise place in which the apex of one portion is seated within a corresponding depression in the one beyond.

Inasmuch as our northeastern species are, in part, still imperfectly known and revision of these seems desirable, an attempt is made to outline the more important characters in the following summary, in which I have had the valued advice and coöperation of Dr. B. L. Robinson.

Synopsis of Species.

* Rootstock continuous, prominently toothed: stem glabrous: leaflets dentate, bluntly mucronate.

D. DIPHYLLA Michx. Rootstock long and continuous, prominently toothed, the annual segments elongated, 3 to 9 cm. long, very slightly tapering; on or near the surface and propagating by its branches. Stems 2 to 4 dm. high, glabrous, stout, simple rarely with an additional flowering branch bearing a single ternate leaf. Leaves ternate, glabrous, those of the stem 2, opposite or nearly so, rarely 3 and alternate, on petioles 1.2 to 3.6 cm. long; basal usually present, long-petioled and similar. Leaflets 2 to 10 cm. long, 1.5 to 6 cm. wide, sessile or short-petiolate, minutely serrulate, unequally and coarsely subacute- to round-dentate, bluntly mucronate; central ones rhomboid-subovate, lateral obliquely so, often slightly lobed. Flowers white; petals 10 to 15 mm. long, twice as long as the sepals. Pedicels 1 to 3 cm. long. Pods rarely matured, 2.5 cm. long or more including style 6 to 8 mm. long. — In rich damp moist or springy soils containing much humus, in woods and shaded situations. Apparently throughout the state except near the coast in the southeastern part. Usually in colonies and local, but rather frequent in the northwestern third of the state.

* * Rootstock interrupted by distinct constrictions, distinctly toothed: stem glabrous: leaflets incisely-dentate, -cleft or -lobate, sharply mucronate. (Exceptions in last species).

D. incisa n. sp. Rootstock interrupted by the union of 4 to 11 or more distinctly fusiform annual segments 1 to 3.5 rarely 6 cm. long, slightly tubercled in the axils of distinct teeth, commonly on or near the surface and propagating by late-appearing branches; remains of earlier stems and leaf-stalks occasional, from obscure to 5 mm. long. Stems 2 to 4 dm. high, glabrous, simple stout. Leaves ternate, glabrous, those of the stem 2, opposite or nearly so, rarely 3 and alternate, on petioles 1 to 4 cm. long; basal usually present, on petioles 1.2 to 2 dm. long. Leaflets sessile or slightly united at the base, rather sparingly and minutely serrulate to ciliolate-serrulate, unequally, coarsely, and more or less deeply incised-dentate, the teeth from subacute to rounded and acutely mucronate: of the stem-leaves 4 to 9 cm. long, 1 to 3.5 cm. wide, narrowly lanceolate to lanceolate, the central one a little longer than the strongly inequalateral and commonly more deeply incised lateral ones: those of the base and detached rootstocks commonly 1.5 to 2 times wider than accompanying stem-leaflets, 5 to 10 cm. long, 1.5 to 6 cm. wide, more deeply incised or lobate, short-petiolate. Flowers averaging 9 (5–13), white, drying nearly so or more or less purple-tinted; petals 15 to 20 mm. long, 5 to 8 mm. wide, obovate, rounded at the apex, fully 2.5 times length of sepals. Pedicels 1 to 3 cm. long. Style soon 6 to 8 mm. long. Pods not seen. — Sherman, on a rich damp slightly open to thickly wooded hillside, 2–15 m. above the Housatonic River, 125–128 m. alt., 19 April, 1903, *Austin & Eames*, no. 3820; 3 May, 1903, *Austin*, no. 3820 a; 10 May, 1903, *Austin & Eames*, no. 3820 b; 16 June, 1903, *Austin*, no. 3820 c. (Type material in the author's herbarium, also in herb. Gray.)

This species differs particularly from *D. diphylla* in the rootstock, the incised and sharply mucronate teeth of the leaflets which are distinctly narrower on the stem, and in the large petals: from *D. maxima* in its usual freedom from the premorse remains of former stems and leaf-stalks fairly characteristic of that species, its opposite leaves which are markedly different in situation, size, shape and marginal characters, sessile leaflets, length of pedicels and of the petals actually and comparatively with the sepals.

D. MAXIMA Nutt. Rootstock interrupted by the union of 4 to 10 or more distinctly fusiform annual segments 1.2 to 3.5 rarely 5 cm. long, tubercled in the axils of prominent incurved teeth; commonly on or near the surface and propagating by late appearing branches; remains of earlier stems and leaf-stalks generally present, premorse, prominent, persistent and distinctive, 2 to 6 mm. long. Stems 2 to 3.5 dm. (2 ft. *Nutt.*) high, glabrous and commonly stout. Leaves ternate, glabrous, those of the stem 2 or more commonly 3 (2 to 7 *Nutt.*), alternate, often remote, rarely 2 and subopposite, much smaller than in the preceding, on petioles 1 to 8 cm. long; those from the base, when present, and detached rootstocks on petioles 1 to 2 dm. long. Leaflets prominently petiolate, moderately to freely

ciliolate, irregularly incised-dentate, the teeth subacute to rounded and acutely mucronate: of the stem-leaves ovate and obtuse, 2 to 5 rarely 7 cm. long, 1.2 to 4 cm. wide, the central one rarely somewhat lobed, the oblique lateral ones frequently 1-cleft or -lobed on the outer side: those from the base and detached rootstocks sometimes similar, usually larger, much broader, 3 to 5.4 cm. long, 2.8 to 5.8 cm. wide, central one broadly rhombic-ovate, -orbicular or broader than long, 1-cleft to -parted bilaterally, lateral ones 1-parted to -divided on the outer side, the inner division sometimes 1- to 2-cleft, obliquely rhomboidal. Flowers purple-tinted, drying pale purple; petals 12 to 15 mm. long, about twice length of sepals which are ovate-oblong, obtuse, 5 to 7 mm. long. Pedicels .6 to 1.5 cm. long in flower, 1.5 to 2 cm. long in fruit. Pods rarely matured, 2.5 to 3 cm. long including style 6 to 8 mm. long. — Windsor, in rich soil on banks and alluvial bottoms beside a woodland stream flowing into Farmington River, 6 June, 1903, *Eames*, no. 3970.

Apparent hybrids between *D. diphylla* and *D. laciniata* are in herbaria as *D. maxima*, and often require careful study to be rightly understood, as they bear more or less resemblance to this species, and possess no constant characters.

D. anomala, n. sp. Rootstock interrupted by the union of several prominently fusiform annual segments, slightly to moderately tuberculate-bracteate on a somewhat smooth surface: deep-seated: apparently intermediate between this section and the following. Stems 2 to 3.5 dm. high, somewhat pubescent, rather slender, solitary or two together, simple or occasionally with an axillary flowering branch. Leaves ternate, pubescent on both surfaces: those of the stem 2, subopposite or separated 1 to 2 cm., or 3 and irregularly alternate a fourth on the branch when present, leafless in one instance, on petioles 1 to 5.5 cm. long: basal rarely present, similar. Stem-leaflets 2 to 5.5 cm. long, 1 to 3 cm. wide, distinctly short-petiolate, somewhat ciliolate, irregularly subacute- to obtuse-dentate or incised, acutely mucronate; central one more or less deeply cleft to 1-parted on each side, the lateral ones 1-parted to -divided on the outer side. Flowers "nearly white, just tinged with rose or purple:"[1] petals 10 to 12 mm. long, obovate, rounded at the apex, 3 times length of the ovate-oblong obtuse sepals which are 3 to 4 mm. long and distinctly smaller than in any other of our species. Pedicels 7 to 20 mm. long, slender in flower. Pods not seen.— Plainville, rich moist woods, 5 May, 1902, *C. H. Bissell*; 11 May, 1902, *C. H. Bissell.* (Type material in herb. Bissell, also in herb. Gray and in the author's herbarium.)

Growing with *D. diphylla* and *D. laciniata* and flowering about midway between them in time. This species may have had a hybrid origin between the widely different accompanying species, but it is

[1] Bissell, Rhod. V, 169.

well established in two small colonies, is very constant in all its characters and apparently well worthy of specific rank, at least tentatively. It differs particularly from any of the preceding in the pubescent stem and leaves, deeply cleft to divided stem-leaflets, the actual and comparative length of sepals and petals and in the surface characters of the rootstock: from either of the following in the situation of the leaves, size, shape and lobation of the leaflets and in the sepals and petals, together with the anomalous rootstock.

* * * Rootstock interrupted by fragile constrictions, tuberous, obscurely bracteate: stems glabrous to pubescent: leaflets variable.

D. HETEROPHYLLA Nutt. Rootstocks interrupted by fragile constrictions connecting the few narrowly fusiform annual segments 1.4 to 3 cm. long, bearing few small bracteate tubercles on a smooth surface: premorse remains of former stems sometimes 2 to 3 mm. long: often deep-seated. Stems 1.5 to 3.5 dm. high, glabrous or somewhat pubescent, commonly slender and several together with 1 to several basal leaves, sometimes with one or two slender few-flowered axillary or erratic branches bearing a simple or cleft leaflet 1.5 to 2 cm. long. Leaves ternate, those of the stem generally 2 (2 to 3), variably opposite, subopposite, alternate or verticillate, commonly near top of stem at flowering time on petioles 0.4 to 3 cm. long: basal on petioles 2 to 15 cm. long, very different. Leaflets minutely serrulate: those of the stem 1.3 to 3.5 cm. long, linear to narrowly lanceolate, sparsely and obscurely to sharply mucronate-serrate, sometimes laciniate-dentate or multifid; acute or acuminate at the apex, sessile to distinctly petiolate at the tapering base: those of the base 1.2 to 4.5 cm. long, nearly the same width, prominently petiolate, and although sometimes similar to those of the stem, usually obtuse at base and apex, broadly rhombic-ovate, the central leaflet equally, the lateral oblique and unequally trilobate by varying clefts, the teeth and apices rounded and mucronate. Flowers light purple, closely cymose-paniculate at first; petals 10 to 16 mm. long, narrow, rounded at the apex, twice as long as the oblong-lanceolate obtuse sepals. Pedicels 0.3 to 2 rarely 3.5 cm. long. Pods 2.5 cm. long.—Not known from Connecticut.

D. LACINIATA Muhl. Rootstocks jointed at the constricted ends of the few narrowly fusiform to oblong, often thick tuberous annual segments 2 to 5 cm. long, 4 to 12 mm. thick at maturity, and bearing on the smooth surface few small bracteate tubercles from some of which branches arise late in the season: segments uniformly separable at certain fixed places. Stems 1 to 3.5 dm. high, pubescent, at least above, rarely glabrous, stout, solitary or several together, with or generally without accompanying root-leaves. Leaves primarily ternate, often appearing quinate, those of the stem 3, commonly near top of stem, verticillate or nearly so, on petioles 2 to 5 cm. long: basal usu-

ally common in the colonies, similar, on longer petioles, 2.5 to 12 cm. wide. Leaflets glabrous to pubescent, sparingly ciliolate, simple and linear or narrowly lanceolate to ovate, and 1- to 3-lobed, -divided, or somewhat multifid, sparingly appressed-serrate to laciniate or gash-toothed, mucronate: those of the stem scarcely petiolate, of the base distinctly so. Flowers white or purple-tinted: petals 10 to 16 rarely 18 mm. long. Pedicels in flower 0.3 to 2.5 cm. long, in fruit 1 to 2 and sometimes 3.5 cm. long. Pods common, strongly ascending on stout pedicels, 2 to 4.5 cm. long including style 6 to 9 mm. long.

In rich damp or often springy soils containing much humus, in woods or along their borders. Apparently rather rare eastward (Killingly and Old Lyme, *C. H. Bissell*), it is found at infrequent intervals throughout a large part of central and western Connecticut away from the coast, sometimes in large colonies, as in Plainville, *C. H. Bissell*, and in Gaylordsville, *Austin & Eames*. Our earliest species to flower.

Bridgeport, Connecticut.

ISAAC HOLDEN.

F. S. Collins.

Isaac Holden, son of Samuel and Sally (Brewster) Holden, was born in Preston, Connecticut, June 11, 1832. He entered Dartmouth College as sophomore in the spring of 1850, and was graduated in 1852. For twenty years after his graduation he was engaged in teaching in various places, the longest time being the last, at Clifton, Staten Island, New York, where he made a specialty of preparing young men for college and scientific schools. In 1872 he gave up teaching, and became connected with the Wheeler and Wilson Company, removing in 1878 to Bridgeport, Connecticut, where the rest of his life was spent, the last ten years as vice-president of the company, and practically in charge of its business. His death in New York City, June 25, 1903, was the result of an operation, rendered necessary by a severe attack of gall stone just on the eve of a proposed trip to Europe, June 10. He is survived by a wife, two sons and three daughters.

Mr. Holden was a man of strong character, great intellectual ability, absolute integrity, and broad sympathies. He was thoroughly at home in both ancient and modern literature, and corresponded regu-

larly with the company's agents in France, Germany, Spain, and Italy in their own languages. He was familiar with the best English literature of all periods, an excellent mathematician, a lover of good music, and a good amateur player on the violin. He believed in thoroughness in all things and had a strong dislike to shams, whether in high or low position, but was always in sympathy with honest work. He was of a genial character in social relations, and made hosts of friends in every quarter.

His interest in botany was lifelong, but it was only in the last fifteen years of his life that he made systematic collections and notes, chiefly on algae. In the study of these plants he was indefatigable, and had explored every nook and corner of the coast near Bridgeport, as well as the fresh water streams and lakes for a considerable distance inland. In preparing his specimens he had an eye for the aesthetic as well as the scientific value; it would be hard to find specimens of marine algae from any other collector at the same time so scientifically adequate and so beautiful as those that he made. He was one of the three founders of the *Phycotheca Boreali-Americana*, and many of the best contributions in this work are from him. He was intending to publish a list of the algae of Connecticut, but though his notes and records seem amply sufficient, he delayed it from his desire for almost ideal accuracy and completeness. *Hydrocoleum Holdeni* Tilden and *Gomontia Holdeni* Collins, the former a marine, the latter a fresh water alga, both discovered by him in Connecticut, commemorate his work.

He was a member of the Phi Beta Kappa, and of the New England Botanical Club; and was for eight years president of the Bridgeport Scientific Society. In 1883 he spent six weeks in Florida; though going there on account of his health, his time was spent mostly in studying the land and marine plants; in 1897 he visited Newfoundland, collecting many algae, some of which were distributed in the Phycotheca. A visit to Europe in 1900 was for business and social objects and not connected with botany.

NOTES ON NEW ENGLAND DESMIDS, — I.

Joseph A. Cushman.

In a series of short papers the writer wishes to add to the records of the forms and distribution of the Desmids of our New England flora. New England forms have not been extensively reported with the exception of the lists given at the end of the present paper, the localities given by Wolle are about all we have to depend upon for the distribution. The records of Wolle while in many points inaccurate, are nevertheless the type of work which with greater care should sometime be done for New England. It is in the spirit of adding to that work that the present series is attempted. The measurements in many cases are more full than given by Wolle.

The variety of forms noted from one pond in Bridgewater, Mass. (Rhodora, March 1903) shows what may be found in any of our numerous New England ponds. In these papers the writer hopes to record the species from as many stations in New England as possible. If the readers of Rhodora would send small amounts of material to be examined it would help the work and be thankfully received.

The following species were identified in a small collection from Steep Brook, Massachusetts, about three miles north of Fall River Railway Station. They were collected in a swamp brook on March 28, 1903, by the writer. Staurastrum was especially well represented.

Euastrum elegans Kg. This species appears to be common here as elsewhere, the specimens obtained differing considerably in this collection. One form is somewhat different from any of Wolle's figures of this species, having the end lobe more square, the angles between it and the lateral lobes almost 90 degrees and the lateral lobes divided into two well separated lobules, more distinct than in any of the figures. This was a large form measuring; diam. 35 μ, length 50–55 μ, thickness through inflation 12 μ. Of this species another smaller form, which is more common, measures: length 22 μ, diam. 18 μ, being about half the size of the first.

Cosmarium undulatum Corda, var. *crenulatum* Wolle. Wolle does not give the measurements of his variety but the specimen corresponds well with his description. Length 28–30 μ. Diam. 25 μ. Isthmus 8 μ.

Cosmarium scenedesmus Delp. The specimens collected here differ from the description and figures of Wolle in two points: surface decidedly granular, bases of semicells diverging very much more than shown in Wolle's figure (Pl. LXI, fig. 7). These characters are very constant in all specimens seen from this locality and it is very abundant. Length 30–32 μ. Diam. 32–36 μ. Isthmus 10 μ.

Penium digitus (Ehrb.) Breb. Specimen a little smaller than the measurements of Wolle. Length 228 μ. Diam. 54 μ.

Staurastrum pygmaeum Breb. A little larger than the measurements of Wolle but agreeing in all other points. Difference very slight. Length 33 μ. Diam. 28 μ. Isthmus 11 μ.

Staurastrum dejectum Breb. Diam. 25 μ.

Staurastrum subarcuatum Wolle. Wolle does not give the locality where he has recognized this species or the exact dimensions observed. The form found, measured: length 32 μ, diam. 30 μ, isthmus 12 μ.

Staurastrum saxonicum Bulnh. A very little smaller than the measurements given by Wolle. Sides in end view distinctly concave, removing it from *S. hirsutum*, which it resembles although slightly smaller. Maine is the only New England state from which this has been reported. Diam. 65 μ.

The following forms were identified in a collection made near Stony Brook Station, Massachusetts, the last week in March, 1903, by Mr. A. F. Blakeslee. As but very little material was examined it will be seen from the following that it was rich and varied in its contained forms. No filamentous forms were noted in the material examined.

Closterium acerosum (Schrank) Ehrb. Length 650 μ. Diam. 45 μ. Very common.

Closterium lineatum Ehrb. Length 540 μ. Diam. 38 μ. Slightly larger than the measurement of Wolle. Common.

Closterium cucumis Ehrb. Length 325 μ. Diam. 50 μ. Wolle gives size in a comparative way only. The specimen fits the figure well and the size as given. Very slight ventral swelling noted.

Cosmarium speciosum Lund. Length 54 μ. Diam. 36 μ. Isthmus 15 μ. Chlorophyll with a morulate appearance, of large granules. Another specimen measures: Length 47 μ. Diam. 32 μ. Isthmus 13 μ.

Cosmarium broomei Thwaites. Length 32 μ. Diam. 30 μ. Isthmus 9–10 μ. Central inflation present, thus separating it from the following species.

Cosmarium pseudobroomei Wolle. Length 50 μ. Diam. 40 μ. Isthmus 15 μ. No distinct central inflation thus separating it from the preceding. Decided difference in this case in size between the two. Wolle considers the inflation the only difference. Apparently new to New England. Wood Lake, New Jersey, is the only locality mentioned by Wolle.

Cosmarium tumidum Lund. Length 29 μ. Diam. 25 μ. Isthmus 8 μ. Maine is the only other of the New England States from which this has been previously reported.

Cosmarium laeve Rab., var. *septentrionale* Wille. Length 25 μ. Diam. 18 μ. Isthmus 7 μ. A little larger than the dimensions given by Wolle. He gives no locality in his mention of this form.

Cosmarium tetrophthalmum (Kg.) Breb. Length 72 μ. Diam. 58 μ. Isthmus 22 μ. Wolle simply mentions this species as "common" without giving any definite localities for it. Not reported before from New England.

Cosmarium octhodes Nord. Length 72 μ. Diam. 54 μ. Isthmus 18 μ. Apices slightly retuse in center.

Cosmarium pyramidatum Breb. Length 62 μ. Diam. 50 μ. Isthmus 15 μ.

Cosmarium amoenum Breb. Length 50 μ. Diam. 25 μ. The typical form.

Cosmarium subcrenatum Hautzsch. Length 38 μ. Diam. 25 μ. Isthmus 14 μ. Common. Reported previously from Maine also.

Cosmarium coelatum Ralfs. Length 50 μ. Diam. 42 μ. Isthmus 12 μ. A somewhat aberrant form with three lateral lobules instead of one as is usually the case. This variation is indicated in Ralfs' figures but not in his description. The specimen in question agrees exactly with one of his original figures (The British Desmidieæ Pl. xvii, fig. 1*c*). This species is new to New England.

Arthrodesmus incus (Ehrb.) Hass. Diam. without spines 20 μ. Length 15 μ. Length of spine 15 μ.

Micrasterias americana (Ehrb.) Kg. Length 145 μ. Diam. 97 μ. Isthmus 30 μ. Form slightly narrower than usual.

Euastrum elegans Kg. Length 32 μ. Diam. 22 μ. Isthmus 7 μ. Of the form of the smaller variety from Steep Brook, Massachusetts.

Staurastrum orbiculare (Ehrb.) Ralfs. Length 22–32 μ. Diam. 22–27 μ. Isthmus 7–9 μ. Specimens are very common and as the measurements indicate they show a considerable variation in size.

The mucous covering is present, causing specimens to stick to the slide so firmly that they are with difficulty turned over for examination. The dimensions are considerably smaller than those given by Wolle.

Staurastrum pseudosebaldi Wille. Length 30 μ. Diam. 61–70 μ. Isthmus 13–15. Found frequently in the material examined. One specimen apparently of this same species was much broader comparatively, measuring. Length 36 μ. Diam. 72 μ. Isthmus 10 μ.

Staurastrum muticum Breb. var. *minor* Wolle. Length 20–25 μ. Diam. 22–25 μ. Isthmus 7 μ. Common in this material and showing many zygospores. These are of very similar character to those of *S. mucronatum* Ralfs as figured by him. Zygospore very spinose, spines acute at ends showing no tendency to branch. Diameter of zygospore without spines, 32 μ.

Staurastrum hirsutum (Ehrb.) Breb. Length 45 μ. Diam. 42 μ. Isthmus 18 μ.

Staurastrum echinatum Breb. Length 33 μ. Diam. 32 μ. Isthmus 12 μ. Slightly larger than the measurements of Wolle. More densely clothed with oculei but far less so than in *S. hirsutum*. About fourteen on a side in end view.

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Society of Natural History, Boston.

ARABIS DRUMMONDI AND ITS EASTERN RELATIVES.

M. L. Fernald.

In late July, 1902, Mr. Emile F. Williams and the writer found in open sandy woods and on the adjacent sand-dunes of "the commons," on the north shore of the Baie des Chaleurs, at New Carlisle, Quebec, an unfamiliar Arabis with pink flowers on divergent pedicels, spreading or loosely ascending pods, and basal leaves quite covered with stellate usually 3-forked hairs. A week later, on ledges and cliffs near the confluence of the Rivière du Loup and the St. Lawrence

another Arabis was found strongly resembling the New England plant with strict inflorescence which has been known as *Arabis confinis*, but with the pods much broader than in New England specimens. This strict plant of Rivière du Loup had the basal leaves, like those of the New England plant which it resembled, glabrous or with some simple stiff hairs usually attached at the middle (malpighiaceous hairs) but rarely 3-forked. The two plants were so very different that the result of the first comparison of them with the current manuals and with extensive herbarium material was a complete surprise, for, according to these sources of information, both plants were *Arabis confinis*, Watson (*A. brachycarpa*, Britton). Further study showed that both *Arabis confinis* and *A. brachycarpa* have been the source of much confusion.

When, in 1887, Dr. Watson described *Arabis confinis*, he included at least two plants, and his description which follows gives little clue to the special form he intended as typical of his species:

"ARABIS (TURRITIS) CONFINIS. Biennial, rarely somewhat glaucous; stems erect, one or several, usually simple, 1 to 3 feet high: lower leaves oblanceolate, usually dentate, finely stellate-pubescent or sometimes glabrous, the cauline oblong to linear-lanceolate, auriculate: flowers white or pinkish: pods more or less spreading or suberect, a line broad or less, straight or slightly curved, usually more or less attenuate above and beaked: seeds small, narrowly oblong, winged.— *A. laevigata*, Hook. Fl. Bor.-Am. 1. 43. *Turritis glabra*, and var. *β*, Torr. & Gray, Fl. 1. 78 and 666. *T. brachycarpa*, Torr. & Gray, l. c. 79. *T. stricta*, Torr. Fl. N. Y. 1. 53, not Grah.; Gray, Gen. Ill. 1. 144, t. 59. *A. Drummondii*, Gray, Manual, 69. From the lower St. Lawrence (Tadoussac, *Pickering*) along the Great Lakes to Lake Winnipeg (*Bourgeau*), and more rarely southward (Mt. Willard, *Faxon*; Dracut, Concord, and Brookline, Mass., *Dame*, *Deane*, *Faxon*; Thimble Islands, Conn., *A. L. Winton*; Cayuga Co., N. Y., *Dudley*; Elgin and Dixon, Ill., *Vasey*). It includes all the '*A. Drummondii*' of the Atlantic region."[1]

As shown by the herbarium specimens as well as by studies of the plants in the field, the characters, "leaves .... finely stellate-pubescent" and "pods more or less spreading," belong to one plant; while the characters, "leaves .... sometimes glabrous" and "pods .... suberect," are exhibited by a plant of quite different habit, habitat, and geographic range. Of the specimens cited by Dr. Watson, those from Tadousac, Lake Winnipeg, and Dixon, Illinois, belong to the

[1] Watson, Proc. Am. Acad. xxii. (1887) 466.

species with basal leaves stellate-pubescent and the pods spreading; while those from the other stations have the lower leaves glabrous or with some malpighiaceous hairs and the pods on erect pedicels.

As already stated, there is nothing in the descriptive text of Dr. Watson to show which plant he intended as *Arabis confinis*. Judging from the two differential features, the leaves and pods, the precedence given in the description to the characters, "leaves finely stellate-pubescent" and "pods more or less spreading," as well as the citation first of the Tadousac plant would indicate one species; while the citation of *Arabis laevigata*, Hook.[1] as the leading synonym points to the plant with smoother leaves and erect pods, though the remaining synonymy points partly to the former plant. Nor does the separation in the 6th edition of the Manual of var. *brachycarpa* (following *A. Drummondii*, var. *brachycarpa* of the 5th edition) merely on the length of the pod sufficiently clear the two plants; while the somewhat fuller definition of the plants in the Synoptical Flora still allows *A. confinis* with leaves either "finely stellate-pubescent or glabrate."

The only clue now obtainable as to Dr. Watson's conception of *Arabis confinis* is from the note following his description, where he says, "Of related species, A. DRUMMONDII, Graham [Gray], is confined to the western mountains, glaucous and glabrous, or usually pubescent below with appressed hairs attached by the middle, with broader straight erect blunt pods, and broadly elliptical winged seeds."[2] From this note the natural assumption might be that by *A. confinis* was meant the plant with stellate pubescence and spreading pods; but since most of the specimens cited are of the other plant it is more probable that Dr. Watson, following an artificial principle still too prevalent, was simply separating from the supposedly local Rocky Mountain species "all the 'A. Drummondii' of the Atlantic region." At any rate, there is little reason to keep up for either of the eastern plants a name so indefinitely applied as *A. confinis*, especially since both the components of that compound species were already clearly defined.

[1] "*A. laevigata*; erecta, glabra, glauca, foliis radicalibus obovatis petiolatis sinuato-dentatis, caulinis linearibus sessilibus intigerrimis, siliquis erectis, seminibus marginatis . . . . . .

Hab. About Lake Huron. *Dr. Todd.*— A foot high. *Pedicels* 3–4 lines long. *Siliquae* quite erect, 1½ to 2 inches long, linear, plane, tapering at the extremity into a very short style." Hook. Fl. Bor.-Am. i. 43 (1829).

[2] Watson, l. c.

In 1838 Torrey & Gray described as follows

Turritis brachycarpa: glabrous and glaucous; radical leaves spatulate, toothed; cauline ones linear-lanceolate, acute, sagittate and somewhat clasping; siliques short, rather broadly linear; pedicels of the flowers pendulous, of the fruit spreading or ascending.

Fort Gratiot, Michigan, and Shore of Lake Superior, *Dr. Pitcher!* — 2 Stem 1–2 feet high, simple or sparingly branched above. Radical leaves pubescent. Flowers rather large, pale purple; the pedicels mostly bent downward. Silique about an inch long and nearly a line wide, straight or somewhat curved, usually spreading at right angles to the stem. Seeds mostly abortive, in 2 distinct rows when young; the ripe and perfect ones nearly as broad as the cell, winged on the margin. — The whole plant is sometimes of a purple color. Nearly related to the preceding [*T. retrofracta*, Hook. *Arabis retrofracta*, Graham, probably *A. Holboellii*, Hornem.]; but distinguished by its short siliques."[1]

From the description alone it is tolerably clear that Torrey & Gray had a plant habitally resembling the Tadousac-Winnipeg component of *Arabis confinis*. This interpretation has been further strengthened by a tracing and by fragments of the original Pitcher material from Fort Gratiot kindly furnished the writer by Dr. John K. Small of the New York Botanical Garden. This material shows that not only in habit but in the closely stellate basal leaves is *Turritis brachycarpa* exactly the plant found by Mr. Williams and the writer at New Carlisle, and included by Dr. Watson under *A. confinis* from Tadousac, Lake Winnipeg, and Dixon, Illinois. This characteristic plant should be known, therefore, as *Arabis brachycarpa*, Britton, based upon *Turritis brachycarpa*, Torr. & Gray, the first clearly defined name for the plant with spreading pods and stellate-pubescent basal leaves.

The other component of *Arabis confinis*, the plant with erect pods and with the basal leaves glabrous or somewhat pubescent with centrally attached hairs, although separated by Dr. Watson from *A. Drummondi*, presents surprising similarities to that species. In fact, the very characters by which the "western" *A. Drummondi* was distinguished from the eastern plant are present in this second component of *A. confinis*.

A. Drummondi, Gray, was based upon *Turritis stricta*, Graham, "which is a true *Arabis*. — *A. Drummondi*."[2] *Turritis stricta*, Graham, based upon material raised in the Royal Botanic Garden at

[1] Torr. & Gray, Fl. i. 79 (1838).

[2] Gray, Proc. Am. Acad. vi. 187 (1866).

Edinburgh from Rocky Mountain seed collected by Drummond, was a plant with "foliis omnibus glabris, subintegerrimis, radicalibus in petiolam attenuatis, caulinis amplexicaulibus, sagittatis; siliquis strictissimis, pedicello stricto, glabro, quadruplo longioribus," and further, with leaves "at the root attenuated into petioles as long as themselves, both the leaf and petiole being ciliated with minute reflected hairs." [1]

A "rubbing" from the Drummond plant is in the Gray Herbarium and in the letter accompanying it Mr. Daniel Oliver wrote from Kew to Dr. Gray, under date of April 17, 1866: "I have been looking this afternoon at our specimens of *Turritis stricta* with a view to the settlement of the question put in yours of the 2nd inst. I enclose a 'rubbing' from the fruiting branch of Drummond's Rocky Mountain specimen. This plant agrees entirely with Bourgeau's plant sent out — apparently through mistake — under the name *T. patula*, Grah. (Rocky Mountains — Alpine region — 18 Augt., 1858), excepting that the petals of Drummond's plant are, in its present state, white, while in the Bourgeau plant they are tinged with purple."

The Drummond plant and the Bourgeau specimen identified by Mr. Oliver with it and labelled by Dr. Gray *Arabis Drummondi* are the narrow-podded plant (in the Drummond specimen pods 5.3–6 cm. long, 1.6–2.3 mm. broad; in the Bourgeau specimen 7 cm. long, 2 mm. broad) represented by many western plants (for example, Wolf & Rothrock's nos. 657, 658, 660 from Colorado; Baker, Earle and Tracy's no. 128 from Colorado; C. F. Baker's no. 48 — *Arabis oxyphylla*, Greene — from Colorado; Henderson's no. 2396 from Mt. Adams, Washington; and M. E. Jones's no. 1177 from Utah) and by most of the so-called *A. confinis* of the East. That the two plants are identical in habit, foliage, pods and seeds, and the occasional presence upon the basal leaves of malpighiaceous hairs, and only rarely of 3-rayed hairs like those of *A. brachycarpa*, is very apparent from examination of a large suite of specimens; and in view of these identities of characters and the lack of any apparent points of difference there seems no reason to separate from *A. Drummondi* the strict plant which in the East has passed as *A. confinis*.

The large plant with broad pods, found at Rivière du Loup and referred to in the introduction to these notes, differs from *Arabis*

[1] Graham, Edinb. New Phil. Jour. 1829, 350.

Drummondi only in its much wider pods (mostly 3 mm. wide). A plant quite like it in habit and with similarly broad pods is represented in the Gray Herbarium by several Rocky Mountain specimens, one of which, Hall & Harbour's no. 35, was apparently a source of some perplexity to Dr. Gray, who first referred to it as *Streptanthus angustifolius*[1] and later took it to be *Turritis brachycarpa* "a short-fruited form of *T. stricta*, Graham."[2] Other similar specimens from Colorado (as Patterson's of 1875) and from Washington (Henderson's no. 2397) have passed as true *A. Drummondi*, while a recent Colorado collection (Baker's no. 341) has been made the type of a proposed new species, *A. connexa*, Greene. As an extreme of *A. Drummondi* this plant seems very well marked, but with the same habit and pubescence, and with only the inconstant tendency to broader pods, it seems better treated as a variety of that widely distributed plant.

The three eastern plants which have been associated as *Arabis Drummondi* and the ill-defined *A. confinis* may be briefly distinguished, then, as follows.

* Basal leaves glabrous or with some simple centrally attached hairs: pods erect or strongly ascending.

A. DRUMMONDI, Gray. Biennial, usually slightly glaucous, glabrous throughout (except for the occasionally pubescent basal leaves), 2 to 9 dm. high: basal leaves oblanceolate, slender-petioled, entire or dentate; cauline erect or strongly ascending, oblong- to linear-lanceolate, entire, sagittate-clasping: flowers pink or whitish, 7 to 10 mm. long, on slender erect pedicels: pods erect (except in age), straight or slightly curved, normally flat, 3.5 to 10 cm. long, 1.3 to 2.3 mm. broad, bluntly pointed: seeds in 2 irregular rows, short-oblong to broadly elliptical, winged. — Proc. Am. Acad. vi. (1866) 187. *A. Drummondii* Gray, Man. ed. 5, 69, in part; Watson, Syn. Fl. i. pt. 1, 166, in part. *A. laevigata*, Hook. Fl. Bor.-Am. i. 43 (1829), not Poir. *A. confinis*, Watson, Proc. Am. Acad. xxii. (1887) 466; Wats. Syn. Fl. l. c. 163; in part; Watson & Coulter, in Gray, Man. ed. 6, 67, in part. *A. brachycarpa*, Britton, Mem. Torr. Cl. v. (1894) 174, Ill. Fl. ii. 150 and Man. 464; in part. *A. oxyphylla*, Greene, Pittonia, iv. (1900) 196. *Turritis stricta*, Graham, Edinb. New Phil. Jour. 1829, 350; Hook. l. c. 40; Torr. & Gray, Fl. i. 79; Torr. Fl. N. Y. i. 53; Gray, Gen. Ill. i. 144, t. 59; not *Arabis stricta*, Huds. *T. glabra*, β., Torr. & Gray, l. c. 78, 666. *Streptanthus angustifolius*, Nutt. in

[1] Gray, Proc. Acad. Phila. 1863, 57.

[2] Gray, Proc. Am. Acad. vi. 187.

Torr. & Gray, l. c. 76 (1838). — Rocky or ledgy banks, northern Maine to the Rocky mountains of British Columbia, south to Nova Scotia, eastern Massachusetts, Rhode Island, southern Connecticut, central and western New York, Ottawa Co., Ohio, Kane Co., Illinois, and along the mountains to Colorado, Utah, and Oregon, and California (?).

Var. **connexa**, n. comb. Stout: the pods 3 to 3.3 mm. broad. — *A. connexa*, Greene, Pittonia, iv. (1900) 197.— Mountains of Colorado and Washington, and at Rivière du Loup, Quebec. Passing gradually to the species.

* * Basal leaves pubescent with mostly 3-forked stellate hairs: pods widespreading or loosely ascending.

A. BRACHYCARPA, Britton. Similar to *A. Drummondi:* radical leaves densely pubescent; cauline glabrous: flower-pedicels soon widely spreading or even pendulous: pods 1.7 to 9 cm. long, 1 to 2 mm. broad, mostly divergent, rarely even somewhat reflexed.— Mem. Torr. Cl. v. (1894) 174, Ill. Fl., l. c. and Man. l. c., in part. *A. Drummondi* and var. *brachycarpa*, Gray, Man. ed. 5, 69, in part. *A. confinis*, Watson, Proc. Am. Acad. xxii. (1887) 466, in part, and (including var. *brachycarpa*) Syn. Fl. l. c., in part; Watson & Coulter, l. c., in part. *A. divaricarpa*, A. Nelson, Bot. Gaz. xxx. (1900) 193. *Turritis brachycarpa*, Torr. & Gray, Fl. i. 79 (1838).— Sandy soil of open woods, banks and shores, more rarely on rocky banks, from Saguenay Co., Quebec, to Saskatchewan and Assiniboia, south to Restigouche Co., New Brunswick, Lake Memphremagog, Quebec, Lake Champlain, Vermont and New York, Jefferson Co., New York, the Great Lakes, Lee Co., Illinois, and along the mountains to Colorado.

GRAY HERBARIUM.

NOTES ON ALGAE,— VI.

F. S. COLLINS.

GRACILARIA CONFERVOIDES (L.) Grev. It has been the practice for many years to assign all specimens of *Gracilaria* from the New England coast to *G. multipartita* (Clem.) J. Ag., the broader forms as the type, the slenderer as var. *angustissima* Harv. Just outside of our limits, politically, Farlow[1] doubtfully reports another species.

[1] Report of the U. S. Commissioner of Fishes and Fisheries for 1871 & 1872, p. 289, 1873.

"In September, 1870, I found large masses of a *Gracilaria*, which I picked up by the armful at East Marion, Long Island. I think likely it was *G. confervoides* Grev., but have misplaced my specimens." In N. E. Marine Algae, p. 164 is a similar note, giving the locality as Orient. Other than this, there appears to be no record of anything but *G. multipartita* north of the Carolinas.

It is by no means easy to tell from a herbarium specimen of *Gracilaria* whether the living plant was flat, compressed or terete; and though the writer had seen several specimens from Buzzard's Bay that in every way resembled the European *G. confervoides*, he did not venture to consider them identical, as he could not be certain that the flattening shown in all the specimens in question was due to their pressing. On Sept. 14, 1902, however, he found on a muddy shore at Mattapoisett, Mass., quantities of *Gracilaria*, in dense rounded tufts, the fronds in every part terete with no trace of flattening; the branches long, attenuate, acute. There was no indication of the flattening at the axils, or of the palmatifid tips, characteristic of *G. multipartita* var. *angustissima*, and it would appear to be safe to add *G. confervoides* to the list of New England algae. The specimens have been distributed under that name as No. 1041, Phycotheca Boreali-Americana.

Actinococcus peltaeformis Schmitz. This plant was formerly considered as the tetrasporic fruit of *Gymnogongrus Norvegicus* (Turn.) J. Ag.[1] but is now known to be a parasite on the latter, in the same way as *A. aggregatus* Schmitz is on *Gymnogongrus Griffithsiae* (Turn.) Mart. and *A. subcutaneus* (Lyng.) Rosenv. on *Phyllophora Brodiaei* (Turn.) J. Ag. It was found by the writer in July, 1902, at Cutler and at Baker's Island, near Harpswell, both on the Maine coast. It will probably be found wherever the host plant grows.

Codiolum pusillum (Lyng.) Foslie. In Rhodora, Vol. III, p. 280, the writer noted the occurrence of this species at Marblehead, Massachusetts, but in a form different from the type, and to which Foslie gave the name forma *Americanum*, distinguished by the clava being nearly or quite as long as the stipe. At Cutler, Maine, in July, 1902, the same species occurred, forming a dense coating on rocks near high water mark, and composed of plants showing all stages from the typical European form to that of the Marblehead plant.

[1] Farlow, N. E. Marine Algae, p. 146.

The more one sees of *Codiolum*, the more difficult it is to draw sharp lines; forms can be found strikingly different from each other, but there are also many intermediate forms. The great need to clear up this matter is for some one to study them, in their natural conditions, through a whole season of growth: this might result in giving us reliable distinctions, or might result in uniting all under one name or a few names.

Spirogyra decimina var. **triplicata** n. v. In a pool in the old slate quarry near Mystic Avenue, Somerville, Massachusetts, the writer found, May 20, 1902, a *Spirogyra* that does not agree exactly with any description accessible, but resembles *S. decimina* (Müll.) Kütz. so much that it seems best for the present to consider it a variety only. The type has two spirals, but occasionally three; cells two to four times as long as the diameter, which is 35–40 μ; spores broadly oval to subglobose. In the variety the spirals are uniformly three; the length of the cells varies from one and a quarter to five times the diameter, which is 40–45 μ; the spores in the shorter cells are nearly globose, in the longer cells cylindrical with rounded ends. The variety has been distributed as No. 960, Phycotheca Boreali-Americana.

In Rhodora, Vol. IV, p. 177, brief mention was made of the occurrence of *Plectonema Battersii* Gom. near Jonesport, Maine. It has since been found at Harpswell, Maine and Marblehead, Mass., and may naturally be expected anywhere along our northern coast, in the mixture of various minute Cyanophyceae which one so commonly finds in tide pools and under overhanging cliffs. It is nearly related to *P. Golenkinianum* Gom., which occurs in similar localities, but the filaments are somewhat larger, 2–3.5 μ in place of 1.2–2 μ, and the trichomes are pale aeruginous in color instead of roseate. In both the trichomes are somewhat torulose, with articulations one third to one quarter their diameter. While Gomont's description [1] represents the two as branching to the same extent, the American specimens show fewer pseudo-branches in *P. Golenkinianum* than in *P. Battersii*.

Microcoleus tenerrimus Gomont, Monographie des Oscillariées, p. 93, Pl. XIV, figs. 9–11. The cosmopolitan species *M. chthonoplastes* (Fl. Dan.) Thuret is very common in warm bays, lagoons and marshes, all along our coast; in the Gulf States and in California

[1] Bull. Soc. Bot. de France, Vol. XLVI, pp. 35 & 36.

there has often been found growing with it a second species, *M. tenerrimus*. While the two are alike in general characters they are amply distinct by the following: *M. chthonoplastes* has trichomes 2.5–6 μ diam., densely packed in sheaths 20–30 μ wide. *M. tenerrimus* has trichomes 1.5–2 μ diam., few in number, in a sheath 10–15 μ wide. It was found in rather small quantity with *M. chthonoplastes* at Southwest Harbor, Mount Desert Island, Maine, by Mr. Isaac Holden, and is to be expected anywhere that the commoner species is found.

XENOCOCCUS KERNERI Hansgirg, Phys. & Alg. Studien, p. 111, Pl. I, 1887. The cells of this species form a denser and more membranous coating to the host plant than do the cells of *X. Schousboei* Thuret, our only species previous to this. Probably as a consequence of this arrangement, the cells are vertically elongated, and may reach a height of 10 μ with a diameter of 4 μ. The species was originally described as growing in fresh water in Bohemia; as No. 685 of Hauck & Richter, Phycotheca Universalis, specimens were distributed, collected in brackish water in East Africa; it was found by the writer growing abundantly on old plants of *Cladophora*, in a high tide pool at Cohasset, Mass., Oct. 12, 1901, and was distributed as No. 952, Phycotheca Boreali-Americana.

MALDEN, MASSACHUSETTS.

CHARLES JAMES SPRAGUE died August 5th at his summer home in Hingham in his eighty-first year. Mr. Sprague was born in Boston January 16th, 1823, and was a banker by profession, although he retired from active business many years ago, devoting himself thereafter to literary and botanical pursuits. He was a poet and musician of rare taste. For some years he was the botanical curator of the Boston Society of Natural History. He was an intimate friend of the late Dr. Asa Gray, to whose collections he contributed many valuable specimens and critical notes. Like the late Edwin Faxon, Mr. Sprague was more anxious to aid others in their investigations than to publish the results of his own patient and critical observations. Realizing the importance of specialization he directed his attention chiefly to the lichens. His valuable collection representing this difficult group of plants has for some time been property of the Boston Society of Natural History. One of Mr. Sprague's most important botanical papers was his treatment of the lichens contributed to Mr. John Robinson's Flora of Essex County, Massachusetts.

Further Notes on the twelfth Preliminary List of New England Plants.— Most local lists of plants of central and southern New England have reported more or less definitely both *Cerastium vulgatum* and *C. viscosum*. But these reports must in most cases have rested upon some misunderstanding of the characters of these plants. The larger-flowered longer-pedicelled plant of the two (the *Cerastium vulgatum* of recent American works) is very common throughout New England, but the other species would according to our present knowledge, appear to be very rare in our region. After examining the *Caryophyllaceae* in many of the larger herbaria of New England the writer has been able to find only one specimen of the true *C. viscosum* from any New England locality. This is a bit collected at Providence in 1845 by Calder and preserved in the collection of Professor W. W. Bailey, now incorporated in the Herbarium of Brown University.

Stellaria longipes is another species reported in the older lists for various parts of New England, but this is certainly due to erroneous determinations of *S. graminea* made by persons consulting works like Wood's Classbook, from which the latter species is omitted.

A careful re-examination of the distinctions between *Arenaria serpyllifolia* and its so-called variety *tenuior* seems to show them of specific value and to make it desirable to classify the latter as a species under its first specific name, *A. leptoclados*, Guss. To the differences of leaves and inflorescence noted in the Synoptical Flora, the following distinctive traits may be added. In *A. serpyllifolia* the capsule at maturity is decidedly flask-shaped, and the walls are of a rather firm texture. In *A. leptoclados* (in which the whole flower is only half to two-thirds as large as in *A. serpyllifolia*) the capsule is subcylindric, and its walls are papery.

Lychnis alba, Mill., may now be definitely recorded from New Hampshire (Starrking, *Mrs. E. H. Terry*) and *L. Flos-cuculi*, L., from Vermont (Greensboro, *Miss H. M. Hodge*), specimens from these localities having been kindly deposited in the Gray Herbarium.

Tetragona expansa, Murr., was recently observed by Professor H. L. Clark as a transient ruderal plant near Woods Hole, Massachusetts, see Rhodora, iii, 88.

Silene apetala, Dame & Collins, Fl. Middles. Co., 15, not Willd., is *S. antirrhina*, L., var. *divaricata*, Robinson.

Silene nivea of Bishop's Cat. Pl. Ct. ed. 1901, p. 25, proves to

have been a Lychnis, either *L. alba*, Mill. or possibly a white-flowered form of *L. dioica*, L.

Buda marina, var. (?) *minor*, Wats. in Gray, Man. ed. 6, p. 90, seems to be only a dwarfed state of *Spergularia salina*, J. & C. Presl.

Sagina nodosa, Fenzl., var. *pubescens*, Koch, appears to have only formal value.—B. L. ROBINSON.

THE NINTH ANNUAL FIELD MEETING OF THE VERMONT BOTANICAL CLUB was held at Arlington and Manchester, Vermont. The Vermont Bird Club participated in the meeting and there were about thirty members of both clubs present. The projected trip to Stratton Mountain, proposed at the last winter meeting, had to be abandoned owing to the lack of suitable accommodations for so large a party. It is hoped, however, that the Club may be able to visit this mountain some future season. The place and time of meeting announced were Arlington, July 3rd, at noon. Five members, however, arriving somewhat in advance of the others, took a tramp in the forenoon, finding as a reward an abundance of *Acer Saccharum*, Marsh., var. *nigrum*, Britton, a tree which is pretty local in Vermont, although common in the Middle States. In the afternoon the Club tramped through Arlington Gap, where the Batterkill River cuts through the Taconic Range. *Desmodium cuspidatum*, Torr. & Gray, *Arabis Canadensis*, L., and *Collinsonia Canadensis*, L., were new to most of the members. Fine plants of *Viola sororia*, Willd., were also found, both on rocky hillsides and on interval land.

On the morning of July 4th, a train was taken for Manchester, and from there, some on foot and others riding, the party reached the top of Mt. Equinox about two in the afternoon. The most notable plant observed on the way was a pubescent form of *Viola rotundifolia*, Michx. *Botrychium matricariaefolium*, A. Br. and *B. lanceolatum*, Angst., were also found. After lunch the party descended the steep and slippery eastern slope of the mountain, being rewarded by one specimen of *Aspidium aculeatum*, Sw., var. *Braunii*, Koch, on the way, and *Galium boreale*, L., near the foot of the mountain.

The weather on both days was ideal and the meeting one of the pleasantest in the history of the Club. Thanks are due to Mrs. Munson, whose forethought and attention to the matter of teams and a guide, smoothed the way on the Mt. Equinox trip.—NELLIE F. FLYNN, Burlington, Vermont.

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